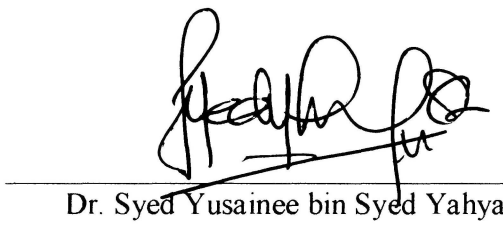
MECHANICAL PROPERTIES OF PALM OIL FIBER REINFORCED THERMOPLASTIC NATURAL RUBBER COMPOSITES

SITI AFIQAH BINTI ABDUL RAHMAN

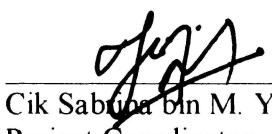
Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Sciences (Hons.) Applied Chemistry
in the Faculty of Applied Sciences
Universiti Teknologi MARA

APRIL 2009

This Final Year Project entitled "Mechanical Properties of Palm Oil Fiber Reinforced Thermoplastics Natural Rubber Composites" was submitted by Siti Afiqah binti Abdul Rahman, in partial fulfillment of the requirements for the Degree of Bachelor Science (Hons.) Applied Chemistry, Faculty of Applied Science, and was approved by:



Dr. Syed Yusainee bin Syed Yahya
Supervisor
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Cik Sabrina bin M. Yahaya
Project Coordinator
B.Sc (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Dr Yusairee bin Mohd
Head of Programme
B.Sc (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Date: 21 MAY 2009

ACKNOWLEDGEMENT

Thanks to the Almighty Allah, the most Gracious Most Merciful because of His gift this project proposal is finished. I would like to congratulate the members of Project Coordinator especially Miss Sabrina bin M. Yahaya on the success of handling the course, CMT 679.

Producing this report is a serious yet exciting experience. It is very much like running for the good examination result that ought to be made successful. It goes without saying that producing a report is not a task that can be shouldered alone. I extend my heartfelt thanks to all those who have laborious toiled with me through thick and thin in the realization of this report.

Firstly, I would glad to say thank you to my Supervisor, Dr. Syed Yusainee for allowing and giving me a great opportunity to attend the Final Year Project under him. Thanks also for supervise me to throughout the semester until the day of presentation.

My gratitude also goes to panels, Dr. Ruziyati and Dr. Hadiani, for the criticized and ideas during the day of presentation. I would like to say thank you for all the guidance to make this proposal higher in the aspect of quality.

I hope all of you will take pride as you flip through the pages of this report. Lastly, may we all cherish the experiences of being together in this project and may all be successful in the future.

Thank you.

TABLE OF CONTENT

ABSTRACT

MECHANICAL PROPERTIES OF PALM OIL FIBER REINFORCED THERMOPLASTIC NATURAL RUBBER COMPOSITES

In this research, polypropylene is mixed with natural rubber to form composite of thermoplastic natural rubber (TPNR). It was then mixed with palm oil fiber as filler using dispersion mixer with various fiber loading and fiber length. Fiber loading that has been used are 20, 40, 60, 80 and 100 g. Fiber length that also has been used are 1.5, 3.0, 4.5 and 6.0 cm. Blank TPNR is set as a reference value. The effect of fiber loading and fiber length on the mechanical properties is investigated. The mechanical properties were investigated in terms of Young's modulus, tensile strength and impact strength. At high fiber loading, the tensile were decreased, whereas Young's modulus and impact were increased. On the other hand, Young's modulus is improved by varies fiber length compared with blank TPNR. As the Young's modulus increase, the impact strength is increased but the tensile strength is decreased up to point of critical fiber length.